SEQUENCE LISTING

<110> Mello, Craig C.
      Tabara, Hiroaki
      Grishok, Alla
      Fire, Andrew

<120> RNA INTERFERENCE PATHWAY GENES AS TOOLS FOR TARGETED GENETIC
      INTERFERENCE

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<141> 2000-10-13

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Phe Tyr Arg His Ser Leu Asp Pro Glu Met Lys Trp Leu Ala Arg Pro
                 15              20                  25

act ggt aaa tgc gac ggc aaa ttc tat gag aag aaa gta ctt ctt ttg          149
Thr Gly Lys Cys Asp Gly Lys Phe Tyr Glu Lys Lys Val Leu Leu Leu
             30              35                  40

gta aat tgg ttc aag ttc tcc agc aaa att tac gat cgg gaa tac tac          197
Val Asn Trp Phe Lys Phe Ser Ser Lys Ile Tyr Asp Arg Glu Tyr Tyr
         45              50                  55

gag tat gaa gtg aaa atg aca aag gaa gta ttg aat aga aaa cca gga          245
Glu Tyr Glu Val Lys Met Thr Lys Glu Val Leu Asn Arg Lys Pro Gly
60                  65                  70                  75

aaa cct ttc cca aaa aag aca gaa att cca att ccc gat cgt gca aaa          293
Lys Pro Phe Pro Lys Lys Thr Glu Ile Pro Ile Pro Asp Arg Ala Lys
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ctc ttc tgg caa cat ctt cgg cat gag aag aag cag aca gat ttt att          341
Leu Phe Trp Gln His Leu Arg His Glu Lys Lys Gln Thr Asp Phe Ile
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cga ctg aac act gtc aca tca aaa atg ctg gtt tcg gag aaa gta gta    437
Arg Leu Asn Thr Val Thr Ser Lys Met Leu Val Ser Glu Lys Val Val
        125             130                 135

aaa aag gat tcg gag aaa aaa gat gaa aag gat ttg gag aaa aaa atc    485
Lys Lys Asp Ser Glu Lys Lys Asp Glu Lys Asp Leu Glu Lys Lys Ile
140             145                 150                 155

tta tac aca atg ata ctt acc tat cgt aaa aaa ttt cac ctg aac ttt    533
Leu Tyr Thr Met Ile Leu Thr Tyr Arg Lys Lys Phe His Leu Asn Phe
                160                 165                 170

agt cga gaa aat ccg gaa aaa gac gaa gaa gcg aat cgg agt tac aaa    581
Ser Arg Glu Asn Pro Glu Lys Asp Glu Glu Ala Asn Arg Ser Tyr Lys
            175                 180                 185

ttc ctg aag aat gtt atg acc cag aaa gtt cgc tac gcg cct ttt gtg    629
Phe Leu Lys Asn Val Met Thr Gln Lys Val Arg Tyr Ala Pro Phe Val
            190                 195                 200

aac gag gag att aaa gta caa ttc gcg aaa aat ttt gtg tac gat aat    677
Asn Glu Glu Ile Lys Val Gln Phe Ala Lys Asn Phe Val Tyr Asp Asn
        205                 210                 215

aat tca att ctg cga gtt cct gaa tcg ttt cac gat cca aac aga ttc    725
Asn Ser Ile Leu Arg Val Pro Glu Ser Phe His Asp Pro Asn Arg Phe
220                 225                 230                 235

gaa caa tca tta gaa gta gca cca aga atc gaa gca tgg ttt gga att    773
Glu Gln Ser Leu Glu Val Ala Pro Arg Ile Glu Ala Trp Phe Gly Ile
                240                 245                 250

tac att gga atc aaa gaa ttg ttc gat ggt gaa cct gtg ctc aat ttt    821
Tyr Ile Gly Ile Lys Glu Leu Phe Asp Gly Glu Pro Val Leu Asn Phe
            255                 260                 265

gca att gtc gat aaa cta ttc tac aat gca ccg aaa atg tct ctt ctg    869
Ala Ile Val Asp Lys Leu Phe Tyr Asn Ala Pro Lys Met Ser Leu Leu
            270                 275                 280

gat tat ctt ctc cta att gtc gac ccc cag tcg tgt aac gat gat gta    917
Asp Tyr Leu Leu Leu Ile Val Asp Pro Gln Ser Cys Asn Asp Asp Val
        285                 290                 295

cga aaa gat ctt aaa aca aaa ctg atg gcg gga aaa atg aca atc aga    965
Arg Lys Asp Leu Lys Thr Lys Leu Met Ala Gly Lys Met Thr Ile Arg
300             305                 310                 315

caa gcc gcg cgg cca aga att cga caa tta ttg gaa aat ttg aag ctg    1013
Gln Ala Ala Arg Pro Arg Ile Arg Gln Leu Leu Glu Asn Leu Lys Leu
            320                 325                 330

aaa tgc gca gaa gtt tgg gat aac gaa atg tcg aga ttg aca gaa cga    1061
Lys Cys Ala Glu Val Trp Asp Asn Glu Met Ser Arg Leu Thr Glu Arg
            335                 340                 345

cat ctg aca ttt cta gat ttg tgc gag gaa aac tct ctt gtt tat aaa    1109
His Leu Thr Phe Leu Asp Leu Cys Glu Glu Asn Ser Leu Val Tyr Lys
            350                 355                 360

gtc act ggt aaa tcg gac aga gga aga aat gca aaa aag tac gat act    1157
Val Thr Gly Lys Ser Asp Arg Gly Arg Asn Ala Lys Lys Tyr Asp Thr
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aca ttg ttc aaa atc tat gag gaa aac aaa aag ttc att gag ttt ccc    1205
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380                     385                 390                 395

cac cta cca cta gtc aaa gtt aaa agt gga gca aaa gaa tac gct gta    1253
His Leu Pro Leu Val Lys Val Lys Ser Gly Ala Lys Glu Tyr Ala Val
                400                 405                 410

cca atg gaa cat ctt gaa gtt cat gag aag cca caa aga tac aag aat    1301
Pro Met Glu His Leu Glu Val His Glu Lys Pro Gln Arg Tyr Lys Asn
                415                 420                 425

cga att gat ctg gtg atg caa gac aag ttt cta aag cga gct aca cga    1349
Arg Ile Asp Leu Val Met Gln Asp Lys Phe Leu Lys Arg Ala Thr Arg
            430                 435                 440

aaa cct cac gac tac aaa gaa aat acc cta aaa atg ctg aaa gaa ttg    1397
Lys Pro His Asp Tyr Lys Glu Asn Thr Leu Lys Met Leu Lys Glu Leu
        445                 450                 455

gat ttc tct tct gaa gag cta aat ttt gtt gaa aga ttt gga tta tgc    1445
Asp Phe Ser Ser Glu Glu Leu Asn Phe Val Glu Arg Phe Gly Leu Cys
460                     465                 470                 475

tcc aaa ctt cag atg atc gaa tgt cca gga aag gtt ttg aaa gag cca    1493
Ser Lys Leu Gln Met Ile Glu Cys Pro Gly Lys Val Leu Lys Glu Pro
                480                 485                 490

atg ctt gtg aat agt gta aat gaa caa att aaa atg aca cca gtg att    1541
Met Leu Val Asn Ser Val Asn Glu Gln Ile Lys Met Thr Pro Val Ile
                495                 500                 505

cgt gga ttt caa gaa aaa caa ttg aat gtg gtt ccc gaa aaa gaa ctt    1589
Arg Gly Phe Gln Glu Lys Gln Leu Asn Val Val Pro Glu Lys Glu Leu
        510                 515                 520

tgc tgt gct gtt ttt gta gtc aac gaa aca gcg gga aat cca tgc tta    1637
Cys Cys Ala Val Phe Val Val Asn Glu Thr Ala Gly Asn Pro Cys Leu
        525                 530                 535

gaa gag aac gac gtt gtt aag ttc tac acc gaa cta att ggt ggt tgc    1685
Glu Glu Asn Asp Val Val Lys Phe Tyr Thr Glu Leu Ile Gly Gly Cys
540                     545                 550                 555

aag ttc cgt gga ata cga att ggt gcc aat gaa aac aga gga gcg caa    1733
Lys Phe Arg Gly Ile Arg Ile Gly Ala Asn Glu Asn Arg Gly Ala Gln
                560                 565                 570

tct att atg tac gac gcg acg aaa aat gaa tat gcc ttc tac aaa aat    1781
Ser Ile Met Tyr Asp Ala Thr Lys Asn Glu Tyr Ala Phe Tyr Lys Asn
                575                 580                 585

tgt aca cta aat acc gga atc ggt aga ttt gaa ata gcc gca aca gaa    1829
Cys Thr Leu Asn Thr Gly Ile Gly Arg Phe Glu Ile Ala Ala Thr Glu
                590                 595                 600

gcg aag aat atg ttt gaa cgt ctt ccc gat aaa gaa caa aaa gtc tta    1877
Ala Lys Asn Met Phe Glu Arg Leu Pro Asp Lys Glu Gln Lys Val Leu
        605                 610                 615

atg ttc att atc att tcc aaa cga caa ctg aat gct tac ggt ttt gtg    1925
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tct gaa aca gtc aca aaa gct ttg gca tca cta agg cac gag aaa gga    2021
Ser Glu Thr Val Thr Lys Ala Leu Ala Ser Leu Arg His Glu Lys Gly
            655                 660                 665

tca aaa cga att ttc tat caa att gca ttg aaa atc aac gcg aaa tta    2069
Ser Lys Arg Ile Phe Tyr Gln Ile Ala Leu Lys Ile Asn Ala Lys Leu
            670                 675                 680

gga ggt att aac cag gag ctt gac tgg tca gaa att gca gaa ata tca    2117
Gly Gly Ile Asn Gln Glu Leu Asp Trp Ser Glu Ile Ala Glu Ile Ser
            685                 690                 695

cca gaa gaa aaa gaa aga cgg aaa aca atg cca tta act atg tat gtt    2165
Pro Glu Glu Lys Glu Arg Arg Lys Thr Met Pro Leu Thr Met Tyr Val
700                 705                 710                 715

gga att gat gta act cat cca acc tcc tac agt gga att gat tat tct    2213
Gly Ile Asp Val Thr His Pro Thr Ser Tyr Ser Gly Ile Asp Tyr Ser
            720                 725                 730

ata gcg gct gta gta gcg agt atc aat cca ggt gga act atc tat cga    2261
Ile Ala Ala Val Val Ala Ser Ile Asn Pro Gly Gly Thr Ile Tyr Arg
            735                 740                 745

aat atg att gtg act caa gaa gaa tgt cgt ccc ggt gag cgt gca gtg    2309
Asn Met Ile Val Thr Gln Glu Glu Cys Arg Pro Gly Glu Arg Ala Val
            750                 755                 760

gct cat gga cgg gaa aga aca gat att ttg gaa gca aag ttc gtg aaa    2357
Ala His Gly Arg Glu Arg Thr Asp Ile Leu Glu Ala Lys Phe Val Lys
            765                 770                 775

ttg ctc aga gaa ttc gca gaa aac aac gac aat cga gca cca gcg cat    2405
Leu Leu Arg Glu Phe Ala Glu Asn Asn Asp Asn Arg Ala Pro Ala His
780                 785                 790                 795

att gta gtc tat cga gac gga gtt agc gat tcg gag atg cta cgt gtt    2453
Ile Val Val Tyr Arg Asp Gly Val Ser Asp Ser Glu Met Leu Arg Val
            800                 805                 810

agt cat gat gag ctt cga tct tta aaa agc gaa gta aaa caa ttc atg    2501
Ser His Asp Glu Leu Arg Ser Leu Lys Ser Glu Val Lys Gln Phe Met
            815                 820                 825

tcg gaa cgg gat gga gaa gat cca gag ccg aag tac acg ttc att gtg    2549
Ser Glu Arg Asp Gly Glu Asp Pro Glu Pro Lys Tyr Thr Phe Ile Val
            830                 835                 840

att cag aaa aga cac aat aca cga ttg ctt cga aga atg gaa aaa gat    2597
Ile Gln Lys Arg His Asn Thr Arg Leu Leu Arg Arg Met Glu Lys Asp
            845                 850                 855

aag cca gtg gtc aat aaa gat ctt act cct gct gaa aca gat gtc gct    2645
Lys Pro Val Val Asn Lys Asp Leu Thr Pro Ala Glu Thr Asp Val Ala
860                 865                 870                 875

gtt gct gct gtt aaa caa tgg gag gag gat atg aaa gaa agc aaa gaa    2693
Val Ala Ala Val Lys Gln Trp Glu Glu Asp Met Lys Glu Ser Lys Glu
            880                 885                 890

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ctt ggt aca tct cgt cca gga cat tac act gtt atg tat gac gat aaa    2837
Leu Gly Thr Ser Arg Pro Gly His Tyr Thr Val Met Tyr Asp Asp Lys
        925             930             935

gga atg agc caa gat gaa gtc tat aaa atg acc tac gga ctt gct ttt    2885
Gly Met Ser Gln Asp Glu Val Tyr Lys Met Thr Tyr Gly Leu Ala Phe
940             945             950             955

ctc tct gct aga tgt cga aaa ccc atc tcg ttg cct gtt ccg gtt cat    2933
Leu Ser Ala Arg Cys Arg Lys Pro Ile Ser Leu Pro Val Pro Val His
            960             965             970

tat gct cat tta tca tgt gaa aaa gcg aaa gag ctt tat cga act tac    2981
Tyr Ala His Leu Ser Cys Glu Lys Ala Lys Glu Leu Tyr Arg Thr Tyr
        975             980             985

aag gaa cat tac atc ggt gac tat gca cag cca cgg act cga cac gaa    3029
Lys Glu His Tyr Ile Gly Asp Tyr Ala Gln Pro Arg Thr Arg His Glu
        990             995             1000

atg gaa cat ttt ctc caa act aac gtg aag tac cct gga atg tcg ttc    3077
Met Glu His Phe Leu Gln Thr Asn Val Lys Tyr Pro Gly Met Ser Phe
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gca taacattttg caaaagtgtc gcccgtttca atcaaatttt tcaattgtag         3130
Ala
1020


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Phe Ser Ser Lys Ile Tyr Asp Arg Glu Tyr Tyr Glu Tyr Glu Val Lys
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Met Thr Lys Glu Val Leu Asn Arg Lys Pro Gly Lys Pro Phe Pro Lys
65                  70                  75                  80
Lys Thr Glu Ile Pro Ile Pro Asp Arg Ala Lys Leu Phe Trp Gln His
            85                  90                  95
Leu Arg His Glu Lys Lys Gln Thr Asp Phe Ile Leu Glu Asp Tyr Val
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Phe Asp Glu Lys Asp Thr Val Tyr Ser Val Cys Arg Leu Asn Thr Val
            115                 120                 125
Thr Ser Lys Met Leu Val Ser Glu Lys Val Val Lys Lys Asp Ser Glu
            130                 135                 140
Lys Lys Asp Glu Lys Asp Leu Glu Lys Lys Ile Leu Tyr Thr Met Ile
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Val Pro Glu Ser Phe His Asp Pro Asn Arg Phe Glu Gln Ser Leu Glu
225                 230                 235                 240
Val Ala Pro Arg Ile Glu Ala Trp Phe Gly Ile Tyr Ile Gly Ile Lys
            245                 250                 255
Glu Leu Phe Asp Gly Glu Pro Val Leu Asn Phe Ala Ile Val Asp Lys
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Leu Phe Tyr Asn Ala Pro Lys Met Ser Leu Leu Asp Tyr Leu Leu Leu
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Thr Lys Leu Met Ala Gly Lys Met Thr Ile Arg Gln Ala Ala Arg Pro
305                 310                 315                 320
Arg Ile Arg Gln Leu Leu Glu Asn Leu Lys Leu Lys Cys Ala Glu Val
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Asp Leu Cys Glu Glu Asn Ser Leu Val Tyr Lys Val Thr Gly Lys Ser
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Asp Arg Gly Arg Asn Ala Lys Lys Tyr Asp Thr Thr Leu Phe Lys Ile
        370                 375                 380
Tyr Glu Glu Asn Lys Lys Phe Ile Glu Phe Pro His Leu Pro Leu Val
385                 390                 395                 400
Lys Val Lys Ser Gly Ala Lys Glu Tyr Ala Val Pro Met Glu His Leu
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Glu Val His Glu Lys Pro Gln Arg Tyr Lys Asn Arg Ile Asp Leu Val
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Met Gln Asp Lys Phe Leu Lys Arg Ala Thr Arg Lys Pro His Asp Tyr
        435                 440                 445
Lys Glu Asn Thr Leu Lys Met Leu Lys Glu Leu Asp Phe Ser Ser Glu
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Glu Leu Asn Phe Val Glu Arg Phe Gly Leu Cys Ser Lys Leu Gln Met
465                 470                 475                 480
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Val Asn Glu Gln Ile Lys Met Thr Pro Val Ile Arg Gly Phe Gln Glu
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Lys Gln Leu Asn Val Val Pro Glu Lys Glu Leu Cys Cys Ala Val Phe
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Val Val Asn Glu Thr Ala Gly Asn Pro Cys Leu Glu Glu Asn Asp Val
        530                 535                 540
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545                 550                 555                 560
Arg Ile Gly Ala Asn Glu Asn Arg Gly Ala Gln Ser Ile Met Tyr Asp
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Ala Thr Lys Asn Glu Tyr Ala Phe Tyr Lys Asn Cys Thr Leu Asn Thr
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Gly Ile Gly Arg Phe Glu Ile Ala Ala Thr Glu Ala Lys Asn Met Phe
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Glu Arg Leu Pro Asp Lys Glu Gln Lys Val Leu Met Phe Ile Ile Ile
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Ser Lys Arg Gln Leu Asn Ala Tyr Gly Phe Val Lys His Tyr Cys Asp
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His Thr Ile Gly Val Ala Asn Gln His Ile Thr Ser Glu Thr Val Thr
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Lys Ala Leu Ala Ser Leu Arg His Glu Lys Gly Ser Lys Arg Ile Phe
        660                 665                 670
Tyr Gln Ile Ala Leu Lys Ile Asn Ala Lys Leu Gly Gly Ile Asn Gln
        675                 680                 685
Glu Leu Asp Trp Ser Glu Ile Ala Glu Ile Ser Pro Glu Glu Lys Glu
        690                 695                 700
```

Arg Arg Lys Thr Met Pro Leu Thr Met Tyr Val Gly Ile Asp Val Thr
705   710   715   720
His Pro Thr Ser Tyr Ser Gly Ile Asp Tyr Ser Ile Ala Ala Val Val
                725   730   735
Ala Ser Ile Asn Pro Gly Gly Thr Ile Tyr Arg Asn Met Ile Val Thr
                740   745   750
Gln Glu Glu Cys Arg Pro Gly Glu Arg Ala Val Ala His Gly Arg Glu
        755   760   765
Arg Thr Asp Ile Leu Glu Ala Lys Phe Val Lys Leu Leu Arg Glu Phe
        770   775   780
Ala Glu Asn Asn Asp Asn Arg Ala Pro Ala His Ile Val Val Tyr Arg
785   790   795   800
Asp Gly Val Ser Asp Ser Glu Met Leu Arg Val Ser His Asp Glu Leu
                805   810   815
Arg Ser Leu Lys Ser Glu Val Lys Gln Phe Met Ser Glu Arg Asp Gly
        820   825   830
Glu Asp Pro Glu Pro Lys Tyr Thr Phe Ile Val Ile Gln Lys Arg His
        835   840   845
Asn Thr Arg Leu Leu Arg Arg Met Glu Lys Asp Lys Pro Val Val Asn
    850   855   860
Lys Asp Leu Thr Pro Ala Glu Thr Asp Val Ala Val Ala Ala Val Lys
865   870   875   880
Gln Trp Glu Glu Asp Met Lys Glu Ser Lys Glu Thr Gly Ile Val Asn
                885   890   895
Pro Ser Ser Gly Thr Thr Val Asp Lys Leu Ile Val Ser Lys Tyr Lys
        900   905   910
Phe Asp Phe Phe Leu Ala Ser His His Gly Val Leu Gly Thr Ser Arg
        915   920   925
Pro Gly His Tyr Thr Val Met Tyr Asp Asp Lys Gly Met Ser Gln Asp
    930   935   940
Glu Val Tyr Lys Met Thr Tyr Gly Leu Ala Phe Leu Ser Ala Arg Cys
945   950   955   960
Arg Lys Pro Ile Ser Leu Pro Val Pro Val His Tyr Ala His Leu Ser
                965   970   975
Cys Glu Lys Ala Lys Glu Leu Tyr Arg Thr Tyr Lys Glu His Tyr Ile
        980   985   990
Gly Asp Tyr Ala Gln Pro Arg Thr Arg His Glu Met Glu His Phe Leu
        995   1000   1005
Gln Thr Asn Val Lys Tyr Pro Gly Met Ser Phe Ala
    1010   1015   1020

<210> 4
<211> 1222
<212> DNA
<213> Caenorhabditis elegans

<400> 4
atggatttaa ccaaactaac gtttgaaagc gttttcggtg gatcagatgt tcctatgaag   60
ccttcccgat cggaggataa caaaacgcca agaaacagaa cagatttgga gatgtttctg   120
aagaaaactc ccctcatggt actagaagag gctgctaagg ctgtctatca aagacgcca   180
acttggggca ctgtcgaact tcctgaaggc ttcgagatga cgttgattct gaatgaaatt   240
actgtaaaag gccaggcaac aagcaagaaa gctgcgagac aaaaggctgc tgttgaatat   300
ttacgcaagg ttgtggagaa aggaaagcac gaaatctttt cattcctgg aacaaccaaa   360
gaagaagctc tttcgaatat tgatcaaata tcggataagg ctgaggaatt gaaacgatca   420
acttcagatg ctgttcagga taacgataac gatgattcga ttcctacaag tgctgaattt   480
ccacctggta tttcgccaac cgagaattgg gtcggaaagt tgcaggaaaa atctcaaaaa   540
agcaagctgc aagcccccaat ctatgaagat ccaagaatg agagaaccga gcgtttcttg   600
gttatatgca cgatgtgcaa tcaaaaaacc agaggaatca gaagtaagaa gaaggacgca   660
aagaatcttg cagcatggtt gatgtggaaa gcgttggaag acggtatcga atctctggaa   720
tcatatgata tggttgatgt gattgaaaat ttggaagaag ctgaacattt actcgaaatt   780
caggatcaag catccaagat taaagacaag cattccgcac tgattgatat actctcggac   840
aagaaaagat tttcagacta cagcatggat ttcaacgtat atcagtgag cacaatggga   900
atacatcagg tgctattgga aatctcgttc cggcgtctag tttctccaga ccccgacgat   960
ttggaaatgg gagcagaaca caccccagat gaagaaatta tgaaggctac tgccgagaag 1020
gaaaagctac ggaagaagaa tatgccagat tccgggccgc tagtgtttgc tggacatggt 1080
tcatcggcgg aagaggctaa acagtgtgct tgtaaatcgg cgattatcca tttcaacacc 1140

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tatgatttca cggattgaaa atattattgc gtattcctga aaaatgaagc gtctgaatga   1200
ttataaaaaa aaaaaaaaaa aa                                             1222
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<210> 5
<211> 385
<212> PRT
<213> Caenorhabditis elegans

<400> 5
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Met Asp Leu Thr Lys Leu Thr Phe Glu Ser Val Phe Gly Gly Ser Asp
 1               5                  10                  15
Val Pro Met Lys Pro Ser Arg Ser Glu Asp Asn Lys Thr Pro Arg Asn
            20                  25                  30
Arg Thr Asp Leu Glu Met Phe Leu Lys Lys Thr Pro Leu Met Val Leu
        35                  40                  45
Glu Glu Ala Ala Lys Ala Val Tyr Gln Lys Thr Pro Thr Trp Gly Thr
    50                  55                  60
Val Glu Leu Pro Glu Gly Phe Glu Met Thr Leu Ile Leu Asn Glu Ile
65                  70                  75                  80
Thr Val Lys Gly Gln Ala Thr Ser Lys Lys Ala Ala Arg Gln Lys Ala
                85                  90                  95
Ala Val Glu Tyr Leu Arg Lys Val Val Glu Lys Gly Lys His Glu Ile
            100                 105                 110
Phe Phe Ile Pro Gly Thr Thr Lys Glu Glu Ala Leu Ser Asn Ile Asp
        115                 120                 125
Gln Ile Ser Asp Lys Ala Glu Glu Leu Lys Arg Ser Thr Ser Asp Ala
    130                 135                 140
Val Gln Asp Asn Asp Asn Asp Asp Ser Ile Pro Thr Ser Ala Glu Phe
145                 150                 155                 160
Pro Pro Gly Ile Ser Pro Thr Glu Asn Trp Val Gly Lys Leu Gln Glu
                165                 170                 175
Lys Ser Gln Lys Ser Lys Leu Gln Ala Pro Ile Tyr Glu Asp Ser Lys
            180                 185                 190
Asn Glu Arg Thr Glu Arg Phe Leu Val Ile Cys Thr Met Cys Asn Gln
            195                 200                 205
Lys Thr Arg Gly Ile Arg Ser Lys Lys Lys Asp Ala Lys Asn Leu Ala
    210                 215                 220
Ala Trp Leu Met Trp Lys Ala Leu Glu Asp Gly Ile Glu Ser Leu Glu
225                 230                 235                 240
Ser Tyr Asp Met Val Asp Val Ile Glu Asn Leu Glu Glu Ala Glu His
                245                 250                 255
Leu Leu Glu Ile Gln Asp Gln Ala Ser Lys Ile Lys Asp Lys His Ser
            260                 265                 270
Ala Leu Ile Asp Ile Leu Ser Asp Lys Lys Arg Phe Ser Asp Tyr Ser
        275                 280                 285
Met Asp Phe Asn Val Leu Ser Val Ser Thr Met Gly Ile His Gln Val
    290                 295                 300
Leu Leu Glu Ile Ser Phe Arg Arg Leu Val Ser Pro Asp Pro Asp Asp
305                 310                 315                 320
Leu Glu Met Gly Ala Glu His Thr Gln Thr Glu Glu Ile Met Lys Ala
                325                 330                 335
Thr Ala Glu Lys Glu Lys Leu Arg Lys Lys Asn Met Pro Asp Ser Gly
            340                 345                 350
Pro Leu Val Phe Ala Gly His Gly Ser Ser Ala Glu Glu Ala Lys Gln
        355                 360                 365
Cys Ala Cys Lys Ser Ala Ile Ile His Phe Asn Thr Tyr Asp Phe Thr
    370                 375                 380
Asp
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<210> 6
<211> 763
<212> PRT
<213> Arabidopsis thaliana

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<400> 6
Gly Ile Ile Asn Gly Pro Lys Arg Glu Arg Ser Tyr Lys Val Ala Ile
1               5                  10                      15
Lys Phe Val Ala Arg Ala Asn Met His His Leu Gly Glu Phe Leu Ala
            20                  25                  30
Gly Lys Arg Ala Asp Cys Pro Gln Glu Ala Val Gln Ile Leu Asp Ile
        35                  40                  45
Val Leu Arg Glu Leu Ser Val Lys Arg Phe Cys Pro Val Gly Arg Ser
    50                  55                  60
Phe Phe Ser Pro Asp Ile Lys Thr Pro Gln Arg Leu Gly Glu Gly Leu
65                  70                  75                      80
Glu Ser Trp Cys Gly Phe Tyr Gln Ser Ile Arg Pro Thr Gln Met Gly
                85                  90                  95
Leu Ser Leu Asn Ile Asp Met Ala Ser Ala Ala Phe Ile Glu Pro Leu
            100                 105                 110
Pro Val Ile Glu Phe Val Ala Gln Leu Leu Gly Lys Asp Val Leu Ser
            115                 120                 125
Lys Pro Leu Ser Asp Ser Asp Arg Val Lys Ile Lys Lys Gly Leu Arg
    130                 135                 140
Gly Val Lys Val Glu Val Thr His Arg Ala Asn Val Arg Arg Lys Tyr
145                 150                 155                     160
Arg Val Ala Gly Leu Thr Thr Gln Pro Thr Arg Glu Leu Met Phe Pro
                165                 170                 175
Val Asp Glu Asn Cys Thr Met Lys Ser Val Ile Glu Tyr Phe Gln Glu
            180                 185                 190
Met Tyr Gly Phe Thr Ile Gln His Thr His Leu Pro Cys Leu Gln Val
        195                 200                 205
Gly Asn Gln Lys Lys Ala Ser Tyr Leu Pro Met Glu Ala Cys Lys Ile
    210                 215                 220
Val Glu Gly Gln Arg Tyr Thr Lys Arg Leu Asn Glu Lys Gln Ile Thr
225                 230                 235                     240
Ala Leu Leu Lys Val Thr Cys Gln Arg Ala Glu Gly Gln Arg Asn Asp
                245                 250                 255
Ile Leu Arg Thr Val Gln His Asn Ala Tyr Asp Gln Asp Pro Tyr Ala
            260                 265                 270
Lys Glu Phe Gly Met Asn Ile Ser Glu Lys Leu Ala Ser Val Glu Ala
        275                 280                 285
Arg Ile Leu Pro Ala Pro Trp Leu Lys Tyr His Glu Asn Gly Lys Glu
    290                 295                 300
Lys Asp Cys Leu Pro Gln Val Gly Gln Trp Asn Met Met Asn Lys Lys
305                 310                 315                     320
Met Ile Asn Gly Met Thr Val Ser Arg Trp Ala Cys Val Asn Phe Ser
            325                 330                 335
Arg Ser Val Gln Glu Asn Val Ala Arg Gly Phe Cys Asn Glu Leu Gly
        340                 345                 350
Gln Met Cys Glu Val Ser Gly Met Glu Phe Asn Pro Glu Pro Val Ile
        355                 360                 365
Pro Ile Tyr Ser Ala Arg Pro Asp Gln Val Glu Lys Ala Leu Lys His
    370                 375                 380
Val Tyr His Thr Ser Met Asn Lys Thr Lys Gly Lys Glu Leu Glu Leu
385                 390                 395                     400
Leu Leu Ala Ile Leu Pro Asp Asn Asn Gly Ser Leu Tyr Gly Asp Leu
            405                 410                 415
Lys Arg Ile Cys Glu Thr Glu Leu Gly Leu Ile Ser Gln Cys Cys Leu
        420                 425                 430
Thr Lys His Val Phe Lys Ile Ser Lys Gln Tyr Leu Ala Asp Val Ser
        435                 440                 445
Leu Lys Ile Asn Val Lys Met Gly Gly Arg Asn Thr Val Leu Val Asp
    450                 455                 460
Ala Ile Ser Cys Arg Ile Pro Leu Val Ser Asp Ile Pro Thr Ile Ile
465                 470                 475                     480
Phe Gly Ala Asp Val Thr His Pro Glu Asn Gly Glu Glu Ser Ser Pro
            485                 490                 495
Ser Ile Ala Ala Val Val Ala Ser Gln Asp Trp Pro Glu Val Thr Lys
        500                 505                 510
Tyr Ala Gly Leu Val Cys Ala Gln Ala His Arg Gln Glu Leu Ile Gln
```

```
            515                      520                      525
Asp Leu Tyr Lys Thr Trp Gln Asp Pro Val Arg Gly Thr Val Ser Gly
    530                      535                      540
Gly Met Ile Arg Asp Leu Leu Ile Ser Phe Arg Lys Ala Thr Gly Gln
545                      550                      555                      560
Lys Pro Leu Arg Ile Ile Phe Tyr Arg Asp Gly Val Ser Glu Gly Gln
            565                      570                      575
Phe Tyr Gln Val Leu Leu Tyr Glu Leu Asp Ala Ile Arg Lys Ala Cys
            580                      585                      590
Ala Ser Leu Glu Pro Asn Tyr Gln Pro Pro Val Thr Phe Ile Val Val
    595                      600                      605
Gln Lys Arg His His Thr Arg Leu Phe Ala Asn Asn His Arg Asp Lys
    610                      615                      620
Asn Ser Thr Asp Arg Ser Gly Asn Ile Leu Pro Gly Thr Val Val Asp
625                      630                      635                      640
Thr Lys Ile Cys His Pro Thr Glu Phe Asp Phe Tyr Leu Cys Ser His
            645                      650                      655
Ala Gly Ile Gln Gly Thr Ser Arg Pro Ala His Tyr His Val Leu Trp
            660                      665                      670
Asp Glu Asn Asn Phe Thr Ala Asp Gly Ile Gln Ser Leu Thr Asn Asn
            675                      680                      685
Leu Cys Tyr Thr Tyr Ala Arg Cys Thr Arg Ser Val Ser Ile Val Pro
            690                      695                      700
Pro Ala Tyr Tyr Ala His Leu Ala Ala Phe Arg Ala Arg Phe Tyr Leu
705                      710                      715                      720
Glu Pro Glu Ile Met Gln Asp Asn Gly Ser Pro Gly Lys Lys Asn Thr
            725                      730                      735
Lys Thr Thr Thr Val Gly Asp Val Gly Val Lys Pro Leu Pro Ala Leu
            740                      745                      750
Lys Glu Asn Val Lys Arg Val Met Phe Tyr Cys
            755                      760


<210> 7
<211> 678
<212> PRT
<213> Drosophila melanogaster

<400> 7
Arg Ala Gly Glu Asn Ile Glu Ile Lys Ile Lys Ala Val Gly Ser Val
  1               5                      10                      15
Gln Ser Thr Asp Ala Glu Gln Phe Gln Val Leu Asn Leu Ile Leu Arg
            20                      25                      30
Arg Ala Met Glu Gly Leu Asp Leu Lys Leu Val Ser Arg Tyr Tyr Tyr
            35                      40                      45
Asp Pro Gln Ala Lys Ile Asn Leu Glu Asn Phe Arg Met Gln Leu Trp
    50                      55                      60
Pro Gly Tyr Gln Thr Ser Ile Arg Gln His Glu Asn Asp Ile Leu Leu
65                      70                      75                      80
Cys Ser Glu Ile Cys His Lys Val Met Arg Thr Glu Thr Leu Tyr Asn
            85                      90                      95
Ile Leu Ser Asp Ala Ile Arg Asp Ser Asp Tyr Gln Ser Thr Phe
            100                     105                     110
Lys Arg Ala Val Met Gly Met Val Ile Leu Thr Asp Tyr Asn Asn Lys
    115                     120                     125
Thr Tyr Arg Ile Asp Asp Val Asp Phe Gln Ser Thr Pro Leu Cys Lys
    130                     135                     140
Phe Lys Thr Asn Asp Gly Glu Ile Ser Tyr Val Asp Tyr Tyr Lys Lys
145                     150                     155                     160
Arg Tyr Asn Ile Ile Ile Arg Asp Leu Lys Gln Pro Leu Val Met Ser
            165                     170                     175
Arg Pro Thr Asp Lys Asn Ile Arg Gly Gly Asn Asp Gln Ala Ile Met
            180                     185                     190
Ile Ile Pro Glu Leu Ala Arg Ala Thr Gly Met Thr Asp Ala Met Arg
    195                     200                     205
Ala Asp Phe Arg Thr Leu Arg Ala Met Ser Glu His Thr Arg Leu Asn
    210                     215                     220
```

```
Pro Asp Arg Arg Ile Glu Arg Leu Arg Met Phe Asn Lys Arg Leu Lys
225                 230                 235                 240
Ser Cys Lys Gln Ser Val Glu Thr Leu Lys Ser Trp Asn Ile Glu Leu
                245                 250                 255
Asp Ser Ala Leu Val Glu Ile Pro Ala Arg Val Leu Pro Pro Glu Lys
            260                 265                 270
Ile Leu Phe Gly Asn Gln Lys Ile Phe Val Cys Asp Ala Arg Ala Asp
        275                 280                 285
Trp Thr Asn Glu Phe Arg Thr Cys Ser Met Phe Lys Asn Val His Ile
    290                 295                 300
Asn Arg Trp Tyr Val Ile Thr Pro Ser Arg Asn Leu Arg Glu Thr Gln
305                 310                 315                 320
Glu Phe Val Gln Met Cys Ile Arg Thr Ala Ser Ser Met Lys Met Asn
                325                 330                 335
Ile Cys Asn Pro Ile Tyr Glu Glu Ile Pro Asp Asp Arg Asn Gly Thr
            340                 345                 350
Tyr Ser Gln Ala Ile Asp Asn Ala Ala Ala Asn Asp Pro Gln Ile Val
        355                 360                 365
Met Val Val Met Arg Ser Pro Asn Glu Glu Lys Tyr Ser Cys Ile Lys
    370                 375                 380
Lys Arg Thr Cys Val Asp Arg Pro Val Pro Ser Gln Val Val Thr Leu
385                 390                 395                 400
Lys Val Ile Ala Pro Arg Gln Gln Lys Pro Thr Gly Leu Met Ser Ile
            405                 410                 415
Ala Thr Lys Val Val Ile Gln Met Asn Ala Lys Leu Met Gly Ala Pro
            420                 425                 430
Trp Gln Val Val Ile Pro Leu His Gly Leu Met Thr Val Gly Phe Asp
    435                 440                 445
Val Cys His Ser Pro Lys Asn Lys Asn Lys Ser Tyr Gly Ala Phe Val
    450                 455                 460
Ala Thr Met Asp Gln Lys Glu Ser Phe Arg Tyr Phe Ser Thr Val Asn
465                 470                 475                 480
Glu His Ile Lys Gly Gln Glu Leu Ser Glu Gln Met Ser Val Asn Met
            485                 490                 495
Ala Cys Ala Leu Arg Ser Tyr Gln Glu Gln His Arg Ser Leu Pro Glu
        500                 505                 510
Arg Ile Leu Phe Phe Arg Asp Gly Val Gly Asp Gly Gln Leu Tyr Gln
        515                 520                 525
Val Val Asn Ser Glu Val Asn Thr Leu Lys Asp Arg Leu Asp Glu Ile
    530                 535                 540
Tyr Lys Ser Ala Gly Lys Gln Glu Gly Cys Arg Met Thr Phe Ile Ile
545                 550                 555                 560
Val Ser Lys Arg Ile Asn Ser Arg Tyr Phe Thr Gly His Arg Asn Pro
            565                 570                 575
Val Pro Gly Thr Val Val Asp Asp Val Ile Thr Leu Pro Glu Arg Tyr
            580                 585                 590
Asp Phe Phe Leu Val Ser Gln Ala Val Arg Ile Gly Thr Val Ser Pro
        595                 600                 605
Thr Ser Tyr Asn Val Ile Ser Asp Asn Met Gly Leu Asn Ala Asp Lys
    610                 615                 620
Leu Gln Met Leu Ser Tyr Lys Met Thr His Met Tyr Tyr Asn Tyr Ser
625                 630                 635                 640
Gly Thr Ile Arg Val Pro Ala Val Cys His Tyr Ala His Lys Leu Ala
            645                 650                 655
Phe Leu Val Ala Glu Ser Ile Asn Arg Ala Pro Ser Ala Gly Leu Gln
        660                 665                 670
Asn Gln Leu Tyr Phe Leu
        675
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<210> 8
<211> 69
<212> PRT
<213> Artificial Sequence

<220>
<223> Consensus sequence

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<221> VARIANT
<222> (1)...(69)
<223> Xaa = Any Amino Acid

<400> 8
Pro Xaa Xaa Xaa Leu Xaa Glu Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa Xaa
  1               5                  10                  15
Xaa Xaa Xaa Tyr Xaa Xaa Xaa Xaa Xaa Xaa Gly Pro Xaa His Xaa Xaa
              20                  25                  30
Xaa Phe Xaa Xaa Xaa Val Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Gly
          35                  40                  45
Xaa Gly Xaa Ser Lys Lys Xaa Xaa Ala Lys Xaa Xaa Ala Ala Xaa Xaa
      50                  55                  60
Ala Leu Xaa Xaa Leu
 65


<210> 9
<211> 766
<212> PRT
<213> Caenorhabditis elegans

<400> 9
Ser Ala Val Glu Arg Gln Phe Ser Val Ser Leu Lys Trp Val Gly Gln
  1               5                  10                  15
Val Ser Leu Ser Thr Leu Glu Asp Ala Met Glu Gly Arg Val Arg Gln
              20                  25                  30
Val Pro Phe Glu Ala Val Gln Ala Met Asp Val Ile Leu Arg His Leu
          35                  40                  45
Pro Ser Leu Lys Tyr Thr Pro Val Gly Arg Ser Phe Phe Ser Pro Pro
      50                  55                  60
Val Pro Asn Ala Ser Gly Val Met Ala Gly Ser Cys Pro Pro Gln Ala
 65                  70                  75                  80
Ser Gly Ala Val Ala Gly Gly Ala His Ser Ala Gly Gln Tyr His Ala
                  85                  90                  95
Glu Ser Lys Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln
              100                 105                 110
Ser Val Arg Pro Ser Gln Trp Lys Met Met Leu Asn Ile Asp Val Ser
          115                 120                 125
Ala Thr Ala Phe Tyr Arg Ser Met Pro Val Ile Glu Phe Ile Ala Glu
      130                 135                 140
Val Leu Glu Leu Pro Val Gln Ala Leu Ala Glu Arg Arg Ala Leu Ser
145                 150                 155                 160
Asp Ala Gln Arg Val Lys Phe Thr Lys Glu Ile Arg Gly Leu Lys Ile
              165                 170                 175
Glu Ile Thr His Cys Gly Gln Met Arg Arg Lys Tyr Arg Val Cys Asn
              180                 185                 190
Val Thr Arg Arg Pro Ala Gln Thr Gln Thr Phe Pro Leu Gln Leu Glu
          195                 200                 205
Thr Gly Gln Thr Ile Glu Cys Thr Val Ala Lys Tyr Phe Tyr Asp Lys
      210                 215                 220
Tyr Arg Ile Gln Leu Lys Tyr Pro His Leu Pro Cys Leu Gln Val Gly
225                 230                 235                 240
Gln Glu Gln Lys His Thr Tyr Leu Pro Pro Glu Val Cys Asn Ile Val
              245                 250                 255
Pro Gly Gln Arg Cys Ile Lys Lys Leu Thr Asp Val Gln Thr Ser Thr
          260                 265                 270
Met Ile Lys Ala Thr Ala Arg Ser Ala Pro Glu Arg Glu Arg Glu Ile
      275                 280                 285
Ser Asn Leu Val Arg Lys Ala Glu Phe Ser Ala Asp Pro Phe Ala His
      290                 295                 300
Glu Phe Gly Ile Thr Ile Asn Pro Ala Met Thr Glu Val Lys Gly Arg
305                 310                 315                 320
Val Leu Ser Ala Pro Lys Leu Leu Tyr Gly Gly Arg Thr Arg Ala Thr
          325                 330                 335
Ala Leu Pro Asn Gln Gly Val Trp Asp Met Arg Gly Lys Gln Phe His
```

```
                  340                      345                      350
Thr Gly Ile Asp Val Arg Val Trp Ala Ile Ala Cys Phe Ala Gln Gln
              355                  360                      365
Gln His Val Lys Glu Asn Asp Leu Arg Met Phe Thr Asn Gln Leu Gln
    370                  375                  380
Arg Ile Ser Asn Asp Ala Gly Met Pro Ile Val Gly Asn Pro Cys Phe
385                  390                  395                  400
Cys Lys Tyr Ala Val Gly Val Glu Gln Val Glu Pro Met Phe Lys Tyr
                  405                  410                  415
Leu Lys Gln Asn Tyr Ser Gly Ile Gln Leu Val Val Val Val Leu Pro
              420                  425                  430
Gly Lys Thr Pro Val Tyr Ala Glu Val Lys Arg Val Gly Asp Thr Val
              435                  440                  445
Leu Gly Ile Ala Thr Gln Cys Val Gln Ala Lys Asn Ala Ile Arg Thr
    450                  455                  460
Thr Pro Gln Thr Leu Ser Asn Leu Cys Leu Lys Met Asn Val Lys Leu
465                  470                  475                  480
Gly Gly Val Asn Ser Ile Leu Leu Pro Asn Val Arg Pro Arg Ile Phe
              485                  490                  495
Asn Glu Pro Val Ile Phe Phe Gly Cys Asp Ile Thr His Pro Pro Ala
              500                  505                  510
Gly Asp Ser Arg Lys Pro Ser Ile Ala Ala Val Val Gly Ser Met Asp
    515                  520                  525
Ala His Pro Ser Arg Tyr Ala Ala Thr Val Arg Val Gln Gln His Arg
    530                  535                  540
Gln Glu Ile Ile Ser Asp Leu Thr Tyr Met Val Arg Glu Leu Leu Val
545                  550                  555                  560
Gln Phe Tyr Arg Asn Thr Arg Phe Lys Pro Ala Arg Ile Val Val Tyr
              565                  570                  575
Arg Asp Gly Val Ser Glu Gly Gln Phe Phe Asn Val Leu Gln Tyr Glu
              580                  585                  590
Leu Arg Ala Ile Arg Glu Ala Cys Met Met Leu Glu Arg Gly Tyr Gln
    595                  600              -  605
Pro Gly Ile Thr Phe Ile Ala Val Gln Lys Arg His His Thr Arg Leu
    610                  615                  620
Phe Ala Val Asp Lys Lys'Asp Gln Val Gly Lys Ala Tyr Asn Ile Pro
625                  630                  635                  640
Pro Gly Thr Thr Val Asp Val Gly Ile Thr His Pro Thr Glu Phe Asp
              645                  650                  655
Phe Tyr Leu Cys Ser His Ala Gly Ile Gln Gly Thr Ser Arg Pro Ser
              660                  665                  670
His Tyr His Val Leu Trp Asp Asp Asn Asn Leu Thr Ala Asp Glu Leu
    675                  680                  685
Gln Gln Leu Thr Tyr Gln Met Cys His Thr Tyr Val Arg Cys Thr Arg
    690                  695                  700
Ser Val Ser Ile Pro Ala Pro Ala Tyr Tyr Ala His Leu Val Ala Phe
705                  710                  715                  720
Arg Ala Arg Tyr His Leu Val Asp Arg Glu His Asp Ser Gly Glu Gly
              725                  730                  735
Ser Gln Pro Ser Gly Thr Ser Glu Asp Thr Thr Leu Ser Asn Met Ala
              740                  745                  750
Arg Ala Val Gln Val Ile Leu Ala Phe Asn Leu Val Ser Ile
              755                  760                  765
```

```
Gly Lys Asp Arg Ile Phe Lys Val Ser Ile Lys Trp Val Ser Cys Val
  1                   5                  10                  15
Ser Leu Gln Ala Leu His Asp Ala Leu Ser Gly Arg Leu Pro Ser Val
              20                  25                  30
Pro Phe Glu Thr Ile Gln Ala Leu Asp Val Val Met Arg His Leu Pro
          35                  40                  45
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Ser Met Arg Tyr Thr Pro Val Gly Arg Ser Phe Phe Thr Ala Ser Glu
    50   55   60
Gly Cys Ser Asn Pro Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe
65   70   75   80
His Gln Ser Val Arg Pro Ser Leu Trp Lys Met Met Leu Asn Ile Asp
                85   90   95
Val Ser Ala Thr Ala Phe Tyr Lys Ala Gln Pro Val Ile Glu Phe Val
                100   105   110
Cys Glu Val Leu Asp Phe Lys Ser Ile Glu Glu Gln Gln Lys Pro Leu
                115   120   125
Thr Asp Ser Gln Arg Val Lys Phe Thr Lys Glu Ile Lys Gly Leu Lys
    130   135   140
Val Glu Ile Thr His Cys Gly Gln Met Lys Arg Lys Tyr Arg Val Cys
145   150   155   160
Asn Val Thr Arg Arg Pro Ala Ser His Gln Thr Phe Pro Leu Gln Gln
                165   170   175
Glu Ser Gly Gln Thr Val Glu Cys Thr Val Ala Gln Tyr Phe Lys Asp
                180   185   190
Arg His Lys Leu Val Leu Arg Tyr Pro His Leu Pro Cys Leu Gln Val
                195   200   205
Gly Gln Glu Gln Lys His Thr Tyr Leu Pro Leu Glu Val Cys Asn Ile
    210   215   220
Val Ala Gly Gln Arg Cys Ile Lys Lys Leu Thr Asp Asn Gln Thr Ser
225   230   235   240
Thr Met Ile Arg Ala Thr Ala Arg Ser Ala Pro Asp Arg Gln Glu Glu
                245   250   255
Ile Ser Lys Leu Met Arg Ser Ala Ser Phe Asn Thr Asp Pro Tyr Val
                260   265   270
Arg Glu Phe Gly Ile Met Val Lys Asp Glu Met Thr Asp Val Thr Gly
    275   280   285
Arg Val Leu Gln Pro Pro Ser Ile Leu Tyr Gly Gly Arg Asn Lys Ala
    290   295   300
Ile Ala Thr Pro Val Gln Gly Val Trp Asp Met Arg Asn Lys Gln Phe
305   310   315   320
His Thr Gly Ile Glu Ile Lys Val Trp Ala Ile Ala Cys Phe Ala Pro
                325   330   335
Gln Arg Gln Cys Thr Glu Val His Leu Lys Ser Phe Thr Glu Gln Leu
                340   345   350
Arg Lys Ile Ser Arg Asp Ala Gly Met Pro Ile Gln Gly Gln Pro Cys
    355   360   365
Phe Cys Lys Tyr Ala Gln Gly Ala Asp Ser Val Gly Pro Met Phe Arg
    370   375   380
His Leu Lys Asn Thr Tyr Ala Gly Leu Gln Leu Val Val Val Ile Leu
385   390   395   400
Pro Gly Lys Thr Pro Val Tyr Ala Glu Val Lys Arg Val Gly Asp Thr
                405   410   415
Val Leu Gly Met Ala Thr Gln Cys Val Gln Met Lys Asn Val Gln Arg
                420   425   430
Thr Thr Pro Gln Thr Leu Ser Asn Leu Cys Leu Lys Ile Asn Val Lys
    435   440   445
Leu Gly Gly Val Asn Asn Ile Leu Leu Pro Gln Gly Arg Pro Pro Val
    450   455   460
Phe Gln Gln Pro Val Ile Phe Leu Gly Ala Asp Val Thr His Pro Pro
465   470   475   480
Ala Gly Asp Gly Lys Lys Pro Ser Ile Ala Ala Val Val Gly Ser Met
                485   490   495
Asp Ala His Pro Asn Arg Tyr Cys Ala Thr Val Arg Val Gln Gln His
                500   505   510
Arg Gln Glu Ile Ile Gln Asp Leu Ala Ala Met Val Arg Glu Leu Leu
                515   520   525
Ile Gln Phe Tyr Lys Ser Thr Arg Phe Lys Pro Thr Arg Ile Ile Phe
    530   535   540
Tyr Arg Asp Gly Val Ser Glu Gly Gln Phe Gln Gln Val Leu His His
545   550   555   560
Glu Leu Leu Ala Ile Arg Glu Ala Cys Ile Lys Leu Glu Lys Asp Tyr
                565   570   575

```
Gln Pro Gly Ile Thr Phe Ile Val Val Gln Lys Arg His His Thr Arg
        580                 585                 590
Leu Phe Cys Thr Asp Lys Asn Glu Arg Val Gly Lys Ser Gly Asn Ile
        595                 600                 605
Pro Ala Gly Thr Thr Val Asp Thr Lys Ile Thr His Pro Thr Glu Phe
        610                 615                 620
Asp Phe Tyr Leu Cys Ser His Ala Gly Ile Gln Gly Thr Ser Arg Pro
625                 630                 635                 640
Ser His Tyr His Val Leu Trp Asp Asp Asn Arg Phe Ser Ser Asp Glu
                645                 650                 655
Leu Gln Ile Leu Thr Tyr Gln Leu Cys His Thr Tyr Val Arg Cys Thr
                660                 665                 670
Arg Ser Val Ser Ile Pro Ala Pro Ala Tyr Tyr Ala His Leu Val Ala
        675                 680                 685
Phe Arg Ala Arg Tyr His Leu Val Asp Lys Glu His Asp Ser Ala Glu
        690                 695                 700
Gly Ser His Thr Ser Gly Gln Ser Asn Gly Arg Asp His Gln Ala Leu
705                 710                 715                 720
Ala Lys Ala Val Gln Val His Gln Asp Thr Leu Arg Thr Met Tyr Phe
                725                 730                 735
Ala


<210> 11
<211> 66
<212> PRT
<213> Xenopus laevis

<400> 11
Pro Val Gly Ser Leu Gln Glu Leu Ala Val Gln Lys Gly Trp Arg Leu
  1               5                  10                  15
Pro Glu Tyr Thr Val Ala Gln Glu Ser Gly Pro Pro His Lys Arg Glu
                20                  25                  30
Phe Thr Ile Thr Cys Arg Val Glu Thr Phe Val Glu Thr Gly Ser Gly
            35                  40                  45
Thr Ser Lys Gln Val Ala Lys Arg Val Ala Ala Glu Lys Leu Leu Thr
        50                  55                  60
Lys Phe
 65


<210> 12
<211> 66
<212> PRT
<213> Homo sapiens

<400> 12
Phe Met Glu Glu Leu Asn Thr Tyr Arg Gln Lys Gln Gly Val Val Leu
  1               5                  10                  15
Lys Tyr Gln Glu Leu Pro Asn Ser Gly Pro Pro His Asp Arg Arg Phe
                20                  25                  30
Thr Phe Gln Val Ile Ile Asp Gly Arg Glu Phe Pro Glu Gly Glu Gly
            35                  40                  45
Arg Ser Lys Lys Glu Ala Lys Asn Ala Ala Ala Lys Leu Ala Val Glu
        50                  55                  60
Ile Leu
 65


<210> 13
<211> 818
<212> PRT
<213> Caenorhabditis elegans

<400> 13
Val Asn Glu Glu Ile Lys Val Gln Phe Ala Lys Asn Phe Val Tyr Asp
  1               5                  10                  15
Asn Asn Ser Ile Leu Arg Val Pro Glu Ser Phe His Asp Pro Asn Arg
```

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                20                        25                        30
Phe Glu Gln Ser Leu Glu Val Ala Pro Arg Ile Glu Ala Trp Phe Gly
         35                        40                        45
Ile Tyr Ile Gly Ile Lys Glu Leu Phe Asp Gly Glu Pro Val Leu Asn
    50                        55                        60
Phe Ala Ile Val Asp Lys Leu Phe Tyr Asn Ala Pro Lys Met Ser Leu
65                        70                        75                        80
Leu Asp Tyr Leu Leu Leu Ile Val Asp Pro Gln Ser Cys Asn Asp Asp
                 85                        90                        95
Val Arg Lys Asp Leu Lys Thr Lys Leu Met Ala Gly Lys Met Thr Ile
             100                       105                       110
Arg Gln Ala Ala Arg Pro Arg Ile Arg Gln Leu Leu Glu Asn Leu Lys
         115                       120                       125
Leu Lys Cys Ala Glu Val Trp Asp Asn Glu Met Ser Arg Leu Thr Glu
    130                       135                       140
Arg His Leu Thr Phe Leu Asp Leu Cys Glu Glu Asn Ser Leu Val Tyr
145                       150                       155                       160
Lys Val Thr Gly Lys Ser Asp Arg Gly Arg Asn Ala Lys Lys Tyr Asp
                 165                       170                       175
Thr Thr Leu Phe Lys Ile Tyr Glu Glu Asn Lys Lys Phe Ile Glu Phe
             180                       185                       190
Pro His Leu Pro Leu Val Lys Val Lys Ser Gly Ala Lys Glu Tyr Ala
         195                       200                       205
Val Pro Met Glu His Leu Glu Val His Glu Lys Pro Gln Arg Tyr Lys
    210                       215                       220
Asn Arg Ile Asp Leu Val Met Gln Asp Lys Phe Leu Lys Arg Ala Thr
225                       230                       235                       240
Arg Lys Pro His Asp Tyr Lys Glu Asn Thr Leu Lys Met Leu Lys Glu
             245                       250                       255
Leu Asp Phe Ser Ser Glu Glu Leu Asn Phe Val Glu Arg Phe Gly Leu
             260                       265                       270
Cys Ser Lys Leu Gln Met Ile Glu Cys Pro Gly Lys Val Leu Lys Glu
         275                       280                       285
Pro Met Leu Val Asn Ser Val Asn Glu Gln Ile Lys Met Thr Pro Val
    290                       295                       300
Ile Arg Gly Phe Gln Glu Lys Gln Leu Asn Val Val Pro Glu Lys Glu
305                       310                       315                       320
Leu Cys Cys Ala Val Phe Val Val Asn Glu Thr Ala Gly Asn Pro Cys
             325                       330                       335
Leu Glu Glu Asn Asp Val Val Lys Phe Tyr Thr Glu Leu Ile Gly Gly
             340                       345                       350
Cys Lys Phe Arg Gly Ile Arg Ile Gly Ala Asn Glu Asn Arg Gly Ala
         355                       360                       365
Gln Ser Ile Met Tyr Asp Ala Thr Lys Asn Glu Tyr Ala Phe Tyr Lys
    370                       375                       380
Asn Cys Thr Leu Asn Thr Gly Ile Gly Arg Phe Glu Ile Ala Ala Thr
385                       390                       395                       400
Glu Ala Lys Asn Met Phe Glu Arg Leu Pro Asp Lys Glu Gln Lys Val
             405                       410                       415
Leu Met Phe Ile Ile Ile Ser Lys Arg Gln Leu Asn Ala Tyr Gly Phe
             420                       425                       430
Val Lys His Tyr Cys Asp His Thr Ile Gly Val Ala Asn Gln His Ile
         435                       440                       445
Thr Ser Glu Thr Val Thr Lys Ala Leu Ala Ser Leu Arg His Glu Lys
    450                       455                       460
Gly Ser Lys Arg Ile Phe Tyr Gln Ile Ala Leu Lys Ile Asn Ala Lys
465                       470                       475                       480
Leu Gly Gly Ile Asn Gln Glu Leu Asp Trp Ser Glu Ile Ala Glu Ile
             485                       490                       495
Ser Pro Glu Glu Lys Glu Arg Arg Lys Thr Met Pro Leu Thr Met Tyr
             500                       505                       510
Val Gly Ile Asp Val Thr His Pro Thr Ser Tyr Ser Gly Ile Asp Tyr
         515                       520                       525
Ser Ile Ala Ala Val Val Ala Ser Ile Asn Pro Gly Gly Thr Ile Tyr
    530                       535                       540
Arg Asn Met Ile Val Thr Gln Glu Glu Cys Arg Pro Gly Glu Arg Ala
```

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545                     550                     555                         560
Val Ala His Gly Arg Glu Arg Thr Asp Ile Leu Glu Ala Lys Phe Val
                565                     570                     575
Lys Leu Leu Arg Glu Phe Ala Glu Asn Asp Asn Arg Ala Pro Ala
            580                 585                 590
His Ile Val Val Tyr Arg Asp Gly Val Ser Asp Ser Glu Met Leu Arg
            595                 600                 605
Val Ser His Asp Glu Leu Arg Ser Leu Lys Ser Glu Val Lys Gln Phe
        610                 615                 620
Met Ser Glu Arg Asp Gly Glu Asp Pro Glu Pro Lys Tyr Thr Phe Ile
625                     630                     635                     640
Val Ile Gln Lys Arg His Asn Thr Arg Leu Leu Arg Arg Met Glu Lys
                645                 650                 655
Asp Lys Pro Val Val Asn Lys Asp Leu Thr Pro Ala Glu Thr Asp Val
            660                 665                 670
Ala Val Ala Ala Val Lys Gln Trp Glu Glu Asp Met Lys Glu Ser Lys
            675                 680                 685
Glu Thr Gly Ile Val Asn Pro Ser Ser Gly Thr Thr Val Asp Lys Leu
        690                 695                 700
Ile Val Ser Lys Tyr Lys Phe Asp Phe Phe Leu Ala Ser His His Gly
705                     710                     715                     720
Val Leu Gly Thr Ser Arg Pro Gly His Tyr Thr Val Met Tyr Asp Asp
                725                 730                 735
Lys Gly Met Ser Gln Asp Glu Val Tyr Lys Met Thr Tyr Gly Leu Ala
            740                 745                 750
Phe Leu Ser Ala Arg Cys Arg Lys Pro Ile Ser Leu Pro Val Pro Val
            755                 760                 765
His Tyr Ala His Leu Ser Cys Glu Lys Ala Lys Glu Leu Tyr Arg Thr
            770                 775                 780
Tyr Lys Glu His Tyr Ile Gly Asp Tyr Ala Gln Pro Arg Thr Arg His
785                     790                     795                     800
Glu Met Glu His Phe Leu Gln Thr Asn Val Lys Tyr Pro Gly Met Ser
                805                 810                 815
Phe Ala
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<210> 14
<211> 63
<212> PRT
<213> Caenorhabditis elegans

<400> 14

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Trp Val Gly Lys Leu Gln Phe Lys Ser Gln Lys Ser Lys Leu Gln Ala
  1               5                  10                  15
Asp Ile Tyr Glu Asp Ser Lys Asn Glu Arg Thr Glu Phe Thr Leu Val
            20                  25                  30
Ile Cys Thr Met Cys Asn Gln Lys Thr Arg Gly Ile Thr Ser Lys Gln
            35                  40                  45
Lys Asp Ala Lys Asn Leu Ala Ala Trp Leu Met Trp Lys Ala Leu
        50                  55                  60
```